REMARKS

Please reconsider the application in view of the above amendments and the following remarks. Applicant thanks the Examiner for carefully considering this application.

Disposition of Claims

Claims 1-4 are pending in this application. Claims 1 and 2 are independent. The remaining claims depend, either directly or indirectly, from claim 2.

Examiner Interview

Applicant thanks the Examiner for courtesies extended during the Examiner Interview conducted on March 17, 2009. During the Examiner Interview, Applicant discussed proposed claim amendments as well as the cited prior art. The proposed claim amendments and arguments presented in this response are substantially similar to those discussed during the Examiner Interview. No agreement was reached at the close of the Examiner Interview. The Examiner is encouraged to contact the representative of the Applicant using the contact information below if any questions or concerns arise.

Claim Amendments

Claims 1 and 2 are amended to clarify aspects of the invention. No new matter is added by these amendments as support for the amendments may be found, for example, in paragraphs [0016], [0049], [0051]-[0052], [0057], and [0076] of the Instant Specification as published. Further, claim 3 is hereby amended to address the Examiner's rejections under 35 U.S.C. § 112. A clean version of the amended claims is also attached for the Examiner's convenience as requested by the Examiner. *See* Office Action, page 4.

Rejection(s) under 35 U.S.C. § 101

Claims 1-4 stand rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. More specifically, the Examiner rejected claims 1-4 for failing to produce a useful, concrete, and tangible result. To the extent the rejection may apply to the pending claims, the rejection is traversed.

Claims 1 and 2 are amended to recite, in part, "performing a production operation based on simulations of the reservoir and network simulators of a reservoir, the simulations performed using the converted hydrocarbon fluid streams." Performing a production operation based on simulations of a reservoir as required by claims 1 and 2 is clearly a tangible result. Further, the specification provides numerous examples of performing production operations based on simulations performed using converted hydrocarbon fluid streams. *See, e.g.*, specification-as-published, paragraph [0076] and [0083]-[0084]. Accordingly, amended independent claims 1 and 2 are directed towards statutory subject matter. Claims 3 and 4 depend either directly or indirectly from claim 2 and, thus, comply with the statutory subject matter requirement of 35 U.S.C. §101 for at least the same reasons as claim 2. In view of this, withdrawal of this rejection is requested.

In addition, as discussed during the Examiner Interview, the Applicant further believes that amended independent claim 1 satisfies the requirements of 35 U.S.C. § 101 in view of Bilski (*see In re Bilski*, 545 F.3d 943, 962-963). Claim 1, as amended, requires that the network and reservoir simulators be "executing on a computer." The Applicant asserts that amended independent claim 1 is sufficiently tied to "a particular machine or apparatus" (*i.e.*, a computer) and thus satisfies the patent-eligible subject matter test discussed in Bilski. In view of this, claim 1 further satisfies the requirements of 35 U.S.C. § 101 in view of Bilski.

Rejections under 35 U.S.C. § 112, second paragraph

Claims 1-4 are rejected under 35 U.S.C. § 112, second paragraph, for failing to particularly point out and distinctly claim the subject matter that the applicant regards as the invention. To the extent the rejection may apply to the pending claims, the rejection is traversed.

The Examiner contends that claims 1 and 2 recite "converting each of the hydrocarbon fluid streams to a fluid model of a controller based on corresponding pseudo components used in the network simulators," but that it is unclear how such conversion is performed. Claims 1 and 2 are amended by way of this reply to recite, in part, "translating each of a plurality of hydrocarbon fluid streams to a common fluid model of a controller by converting pseudo components of each of the plurality of hydrocarbon fluid streams to a super-set of pseudo-components used in the reservoir and network simulators." In other words, the fluid streams are translated by converting the pseudo-components of the fluid streams to a *super-set* including all of the pseudo-components used in each of the reservoir and network simulators. Further, the specification clearly describes how fluid streams of the simulators may be translated to a common fluid model by converting data to a super-set of pseudo-components. *See, e.g.*, Instant Specification, paragraph [0076]. Thus, one skilled in the art would appreciate that the fluid streams of claims 1 and 2 are translated by converting the pseudo-components of the fluid streams to the super-set of pseudo-components used in all simulators.

Furthermore, the Examiner asserts that claim 3 recites "global constraints are applied by apportioning them between simulation tasks," but that it is unclear how such constraints are applied. Claim 3 is amended by way of this reply to recite, in part, "means for apportioning global production and injection constraints between simulation tasks of the reservoir and network

simulators." In other words, claim 3 requires, in part, a means for assigning portions of global constraints to each of a number of simulators. It is clear that global constraints would apply to all reservoir and network simulators and, thus, may be apportioned among the simulation tasks of those simulators. *See, e.g.*, Instant Specification, paragraphs [0049] and [0051]-[0052]. In view of this, one skilled in the art would appreciate that the constraints are apportioning by assigning portions of the constraints to simulation tasks of each of the simulators.

Furthermore, the Examiner asserts that claims 1 and 2 recite "the hydrocarbon fluid streams," which is vague and indefinite because there is insufficient antecedent basis for the limitation. Claims 1 and 2 are amended by way of this reply to recite, in part, "a plurality of hydrocarbon fluid streams." Thus, a sufficient antecedent basis has been established for this limitation in claims 1 and 2.

In view of the above, independent claims 1-4 satisfy 35 U.S.C. § 112, second paragraph. Accordingly, withdrawal of this rejection is respectfully requested.

Rejections under 35 U.S.C. § 102

Claims 1-4 stand rejected under 35 U.S.C. § 102 as being anticipated by Briens et al., *Application of Sequential Staging of Tasks to Petroleum Reservoir Modeling* ("Briens"). To the extent the rejection may apply to the amended and original claims, the rejection is traversed.

"A claim is anticipated only if *each and every element* as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987) (emphasis added). Further, "[t]he identical invention must be shown in as complete detail as is contained in the claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236 (Fed. Cir. 1989). The Applicant respectfully asserts that

Briens does not expressly or inherently describe each and every element of independent claims 1 and 2.

Amended independent claims 1 and 2 recite, in part, "translating each of a plurality of hydrocarbon fluid streams to a common fluid model of a controller by converting pseudo-components of each of the plurality of hydrocarbon fluid streams to a super-set of pseudo-components used in the reservoir and network simulators executing on the computer." Thus, the claims clearly require, in part, the conversion of fluid streams to a controller's fluid model based on *a super-set of pseudo-components*, which includes the pseudo-components of each of the reservoir and network simulators. *See* originally-filed specification, paragraphs [0057].

In contrast, Briens only discloses that reservoir fluid is described as a mixture of hydrocarbon and non-hydrocarbon components. *See* Briens, page 428, introduction. In other words, Briens discloses that the components of a *single* fluid simulation may be apportioned among parallel computers. *See* Briens, page 428, abstract. However, Briens fails to disclose translating fluid streams of *multiple* simulators to a common fluid model using a *super-set of pseudo-components*, which includes the pseudo-components of each of the multiple simulators. In view of this, it is clear that distributing a single simulation as in Briens is *not* equivalent to converting fluid streams to a common fluid model, as required by independent claims 1 and 2.

Furthermore, amended independent claims 1 and 2 recite, in part, "synchronizing the advancement through time of the reservoir and network simulators." In contrast, Briens only discloses a system for improving the performance of large-scale simulations by using sequential staging of tasks. *See* Briens, page 429, column 1 at first full paragraph. For example, the sequential staging of Briens discloses how the processes in an iterative simulation technique (slice successive

over relaxation) may be distributed among multiple processors. *See* Briens, page 431, column 1 at first full paragraph. However, as discussed above, Briens only discloses that the components of a *single* fluid simulation may be apportioned among parallel computers. *See* Briens, page 428, abstract. Thus, Briens cannot disclose that *multiple* fluid stream *simulations* are synchronized as each the simulations is performed. In view of this, it is clear that sequential staging as in Briens is not equivalent to synchronizing the advancement through time of multiple simulations as required by independent claims 1 and 2.

In view of the above, Briens fails to disclose all the limitations of amended independent claims 1 and 2. Thus, amended independent claims 1 and 2 are patentable over Briens. Dependent claims 3 and 4 are patentable for at least the same reasons as the aforementioned amended independent claims. Accordingly, withdrawal of this rejection is respectfully requested.

Conclusion

Applicant believes this reply is fully responsive to all outstanding issues and places this application in condition for allowance. If this belief is incorrect, or other issues arise, the Examiner is encouraged to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 94.0052-US-PCT; 09469/161002).

Dated: April 2, 2009

Respectfully submitted,

By /Robert P. Lord/

Robert P. Lord
Registration No.: 46,479
OSHA · LIANG LLP
909 Fannin Street, Suite 3500
Houston, Texas 77010
(713) 228-8600
(713) 228-8778 (Fax)
Attorney for Applicant

Attachment (Clean Version of Amended Claims)